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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,426	09/13/2001	Shuichi Kanno	NIP-247	3908

24956 7590 07/20/2005

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EXAMINER

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ART UNIT PAPER NUMBER

1764

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/936,426	<b>Applicant(s)</b> KANNO ET AL.	
	<b>Examiner</b> Hien Tran	<b>Art Unit</b> 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 May 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "18" (Figs. 9-10). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

### ***Specification***

3. The disclosure is objected to because of the following informalities:

On page 7, lines 11, 19, 21, 23 "a" should be deleted (note the term "compounds"). See the remained specification likewise (for example, page 8, line 13; page 23, line 5; page 30, line 5; page 31, line 12; page 35, line 9; etc.).

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On page 7, line 11 “compoundsuch” should be changed to --compound such--. See the remained specification likewise (for example, page 35, line 13; etc.).

On page 13, line 8 “ofnd” should be changed to --of and--. See the remained specification likewise.

On page 5, line 18 “oft” should be changed to --of at--. See the remained specification likewise (for example, page 41, line 3; etc.).

On page 34, line 7 “is” should be changed to --are--.

Appropriate correction is required.

The lengthy specification contains similar language problems and should be amended in like manner.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13, 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 13, line 5 it is unclear as to where the CO, SO<sub>2</sub>F<sub>2</sub> and N<sub>2</sub>O come from, how they are related to the fluorine compounds set forth in line 2, what is intended by “charged therein”, whether they are added into the apparatus.

In claim 15, it is unclear as to what structural limitation applicants are attempting to recite; in lines 3-4 it is unclear as to where the  $\text{SO}_2\text{F}_2$  comes from, how it is related to the fluorine compounds set forth in line 2; in line 6 it is unclear as to whether the gas is the same as to the gas set forth in line 3.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 08-238418.

With respect to claims 13-14, JP 08-238418 discloses an apparatus for decomposition of fluorine compounds comprising: a reactor 2 having a catalyst 1 for decomposing fluorine compounds and a catalyst 7 for the decomposition of CO disposed downstream of the catalyst 1; a heater 4 for heating the catalysts; a moisture supplying unit for supplying moisture to the fluorine compounds; an oxygen supplying unit for adding oxygen; and an inert gas supplying unit for adding an inert gas as a diluent gas (see, for example, Figs. 1-2, abstract; sections 0017-0018, 0021).

With respect to claim 15, although JP 08-238418 is silent as to whether the catalyst 7 may be used to decompose  $\text{SO}_2\text{F}_2$ , such is inherent therein since the catalyst disclosed in JP 08-238418 is the same as that of the instant claim and therefore the catalyst of JP 08-238418 has the same property as that of the instant claim. Note that the type of the intermediate by-product formed therein depends on the type of exhaust gas passing through the reactor.

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With respect to claims 16-17, JP 08-238418 discloses that the catalyst for the decomposition of CO is noble metal (see, for example, sections 0021, 0037).

With respect to claim 18, JP 08-238418 further discloses a gas scrubbing tower 12 for removing components from a gas discharged from said reactor 2 by contacting said gas with alkaline aqueous solution (see, for example, abstract; Figs. 1-2).

Note that intended use is of no patentable moment in apparatus claims.

Instant claims 13-18 structurally read on the apparatus of JP 08-238418.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08-238418 in view of JP 61-3040.

As set forth above, JP 08-238418 is silent as to whether the catalyst 7 may be used to decompose SO<sub>2</sub>F<sub>2</sub>. However, it should be noted that the type of the intermediate by-product

formed therein depends on the type of exhaust gas passing through the reactor. Although JP 08-238418 shows one example of the fluorine compounds, such as CFC (chlorofluorocarbon) which is decomposed into  $\text{CO}_2$ ,  $\text{CO}$ ,  $\text{HF}$ ,  $\text{HCl}$ .

JP 61-3040 discloses that the other type of fluorine compounds, such as  $\text{SF}_6$  is decomposed into  $\text{SO}_2\text{F}_2$ .

JP 08-238418 further discloses that the exhaust gas containing the intermediate by-product passes through the second catalyst 7 which is the same as that of the instant claim. Therefore, the intermediate by-product of  $\text{SO}_2\text{F}_2$  is inherently decomposed and removed by the second catalyst.

It would have been obvious to one having ordinary skill in the art to utilize the apparatus of JP 08-238418 to treat other types of fluorine compounds, such as  $\text{SF}_6$  so as to optimize the availability of the apparatus for different types of fluorine compounds thereof.

12. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08-238418 in view of EP 885,648.

The apparatus of JP 08-238418 is substantially the same as that of the instant claims, but fails to disclose the specific type of the catalyst for decomposing said fluorine compounds as claimed.

However, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas. Such catalyst includes a combination of aluminum and nickel oxide.

It would have been obvious to one having ordinary skill in the art to alternately select an appropriate catalyst for decomposing fluorine compounds, such as the combination catalyst of

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aluminum and nickel oxide, in the apparatus of JP 08-238418 since such type of catalyst would increase the decomposition rate for the fluorine compounds as taught by EP 885,648.

13. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 885,648 in view of JP 08-238418.

With respect to claims 13-14, 18, EP 885,648 discloses an apparatus for decomposition of fluorine compounds including  $\text{SF}_6$  or  $\text{NF}_3$  gas, said apparatus comprising: a reactor 8 having a catalyst 9 for decomposing fluorine compounds and a scrubber 11 for neutralizing a part of carbon dioxides, nitrogen oxides and sulfur oxides disposed downstream of the catalyst 9; a heater 10 for heating the catalyst; a moisture supplying unit 4 for supplying moisture to the fluorine compounds; an oxygen supplying unit 3 for adding oxygen (see, for example, Fig. 9, pages 2-4).

The apparatus of EP 885,648 is substantially the same as that of the instant claims, but fails to disclose whether a second catalyst may be provided to decompose at least one of oxides of carbon, sulfur and nitrogen and fails to disclose provision of an inert gas supplying unit as claimed.

However, the same teachings with respect to JP 08-238418 apply.

It would have been obvious to one having ordinary skill in the art to provide an inert gas supplying unit in the apparatus of EP 885,648 so as to dilute the exhaust gas thereof as taught by JP 08-238418.

It would have been obvious to one having ordinary skill in the art to provide a second catalyst for decomposing at least one of oxides of carbon, sulfur and nitrogen in the apparatus of



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EP 885,648 for further removing the by-products generated in the decomposition process thereof as taught by JP 08-238418.

With respect to claims 15-17, the same comments with respect to JP 08-238418 apply.

With respect to claims 19-20, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including SF<sub>6</sub> or NF<sub>3</sub> gas. Such catalyst includes a combination of aluminum and nickel oxide.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 885,648 in view of JP 08-238418 as applied to claims 13-20 above and further in view of JP 61-3040.

The same comments with respect to JP 61-3040 apply.

***Response to Arguments***

15. Applicant's arguments filed 5/10/05 have been fully considered but they are not persuasive.

Applicants argue that JP '418 discloses an apparatus for decomposing a chlorofluorocarbon and is silent with respect to SF<sub>6</sub> or NF<sub>3</sub>. Since the life of a fluorine compound containing fluorine and chlorine is much shorter than a life of a PFC which contains only fluorine, therefore the decomposing catalyst for such fluorine compound is not necessarily effective for other halogen compounds. Such contention is not persuasive as the instant claim does not exclude the presence of chlorofluorocarbon. The catalyst of JP '418 is for decomposing fluorine compounds and therefore meets the instant claim. Furthermore, it should be noted that the compounds in the exhaust gas are not parts of the apparatus.

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Applicants argue that JP '040 discloses that the SF<sub>6</sub> is decomposed by arcing and is silent as to any catalyst. Such contention is not persuasive as JP '040 is relied upon for teaching that one of intermediate by-products formed in the decomposition process of SF<sub>6</sub> is SO<sub>2</sub>F<sub>2</sub>.

Applicants argue that JP '418 does not disclose decomposing of SF<sub>6</sub> or NF<sub>3</sub> gas. Such contention is not persuasive as although JP '416 is silent as to the specific SF<sub>6</sub> or NF<sub>3</sub> gas, JP '416 discloses the general decomposition of fluorine compounds and therefore meets the instant claim. As set forth above, the type of compounds in the exhaust gas is not a part of the apparatus.

### ***Conclusion***

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 885648 is cited for showing state of the art.

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18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Hien Tran*

HT

**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**